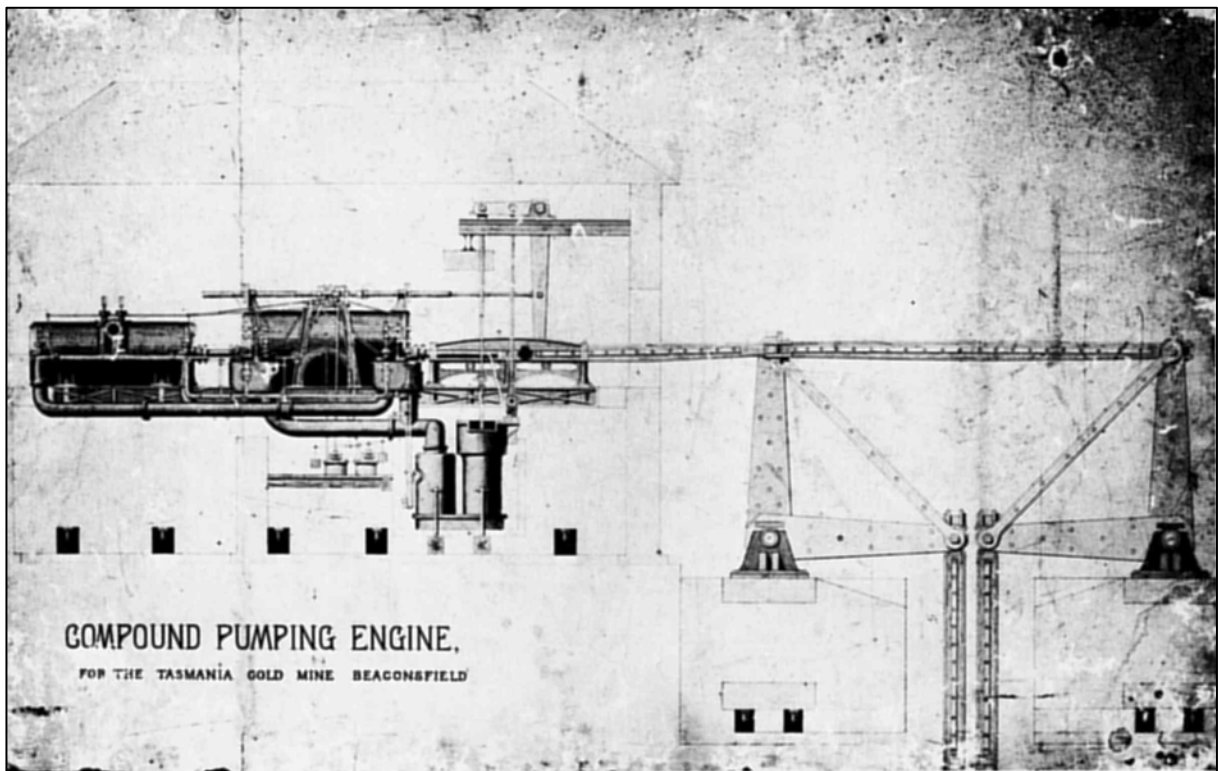


**NOMINATION
OF THE
TASMANIA GOLD MINE
at BEACONSFIELD**

**FOR AN
HISTORIC ENGINEERING MARKER**



Two-cylinder steam engine, angle bobs and pumping rods

Prepared by Bruce Cole and Owen Peake
Engineering Heritage Tasmania
Engineers Australia

February 2005

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INTRODUCTION

The Tasmania Gold mine is an underground mine at Beaconsfield in northern Tasmania. Mining began in 1877 and was progressively developed in lateral extent and to greater depths. The large inflow of water demanded continuous pumping. As the depth increased, so too did the lift and capacity of the pumping system needed to enable mining to be extended to lower levels. Eventually the cost of pumping made the mine uneconomic and it closed in 1914. At that time the Grubb Shaft was 1,500 ft (457m) deep.

In the 1980s the reef was explored by diamond drilling down to 3,300 ft (1,000m) with payable gold all the way. In the 1990s the Hart Shaft was reopened and enlarged, new pumps and a new winder were installed, and the mine was dewatered. Some of the original equipment was recovered. Gold production resumed in 1999.

This gold mine is nominated for a Historic Engineering Marker because

- a) the largest mine pumping equipment in the world was installed at the mine;
- b) there are guided tours and an excellent mining museum within the original mine buildings;
- c) the new mine demonstrates advances in technology over 100 years.

Plaque Nomination Form

NOTE: This form must be signed and submitted by the Chair of the relevant Division engineering heritage group

Name of work: **TASMANIA GOLD MINE**

The above-mentioned work is nominated for the award of an

Historic Engineering Marker

Location, including address and map grid reference if a fixed work:

Beaconsfield, northern Tasmania

AMG Zone 55 ⁴844E ⁵⁴387N

Mine Owner: **Beaconsfield Mine Joint Venture,
West Street, Beaconsfield Tasmania 7270**

Museum Owner **West Tamar Council,
West Street, Beaconsfield Tasmania 7270**

The owners have been advised of this nomination, and letters of agreement are attached.

Access to site: **Public access through the Museum and around the collapsed
Grubb Shaft. Overview of the new Hart Shaft from the Museum.
Free parking available.**

Nominating Body **Engineering Heritage Tasmania**

(Signed).....
For Nominating Body or person
Date:

This plaquing nomination is supported and is recommended for approval.

(Signed).....
Chair, Division Engineering Heritage Group
Date:

After signing, forward to:
The Administrator
Engineering Heritage Australia
Engineers Australia
Engineering House
11 National Circuit
BARTON ACT 2600

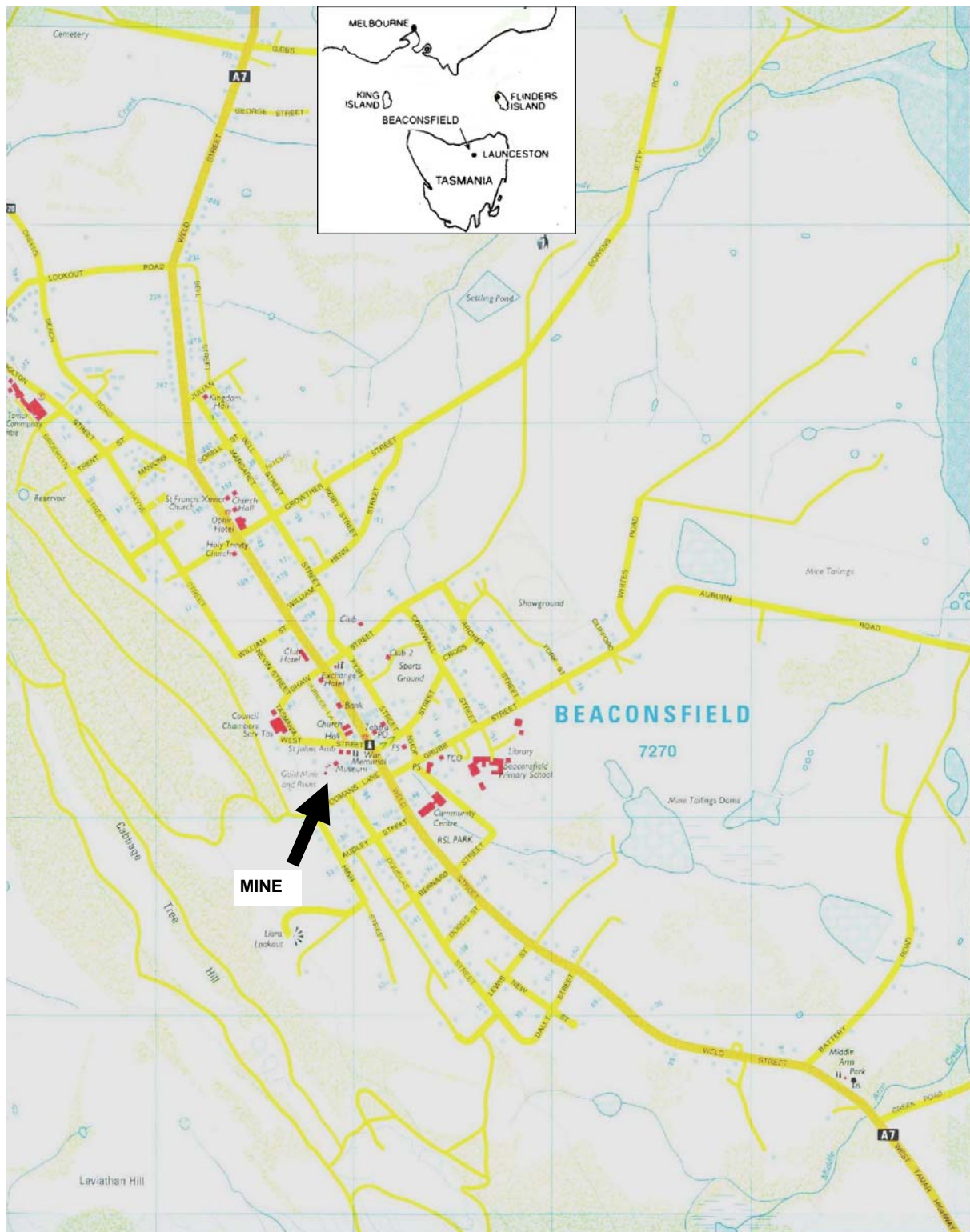


Figure 1 Beaconsfield in northern Tasmania - Location Map

HISTORY

Gold discoveries occurred in Australia at Bathurst in 1823 and at Ophir and Ballarat in 1851. The Ballarat deposits triggered a major gold rush and the famous Eureka Stockade.

Alluvial gold had been discovered in the vicinity of Cabbage Tree Hill at Beaconsfield as early as 1868. William Dally found a reef of gold on the eastern slopes of Cabbage Tree Hill in 1877. It was the surface expression of a rich reef which extends over 1.4 kilometres in length and to a considerable depth. Several mines were established along the reef.

As soon as shafts were excavated to follow the reef below ground, they all experienced substantial water inflows. Unfortunately the reef was embedded in a porous limestone deposit measuring 14 km by 2 km. This deposit formed a huge water storage reservoir that was constantly replenished by rainfall. Constant pumping was required to keep the water level below the workings. The water problem was made worse by a particularly direct connection between the mines and an old limestone quarry on the banks of Blythe Creek to the south of the reef. When the creek flooded, it overflowed into the quarry. The miners made great efforts to contain the creek, but there were several disasters when floods overwhelmed the fluming, flowed into the mine and caused long periods of lost production, until the pumps removed the excess water.

The water in the various mine shafts was connected so that the deepest shaft was likely to bear the greatest pumping burden. By 1881 there was agreement to form a "Drainage Union" and the "Union" pumping plant was installed in the 486 ft (150 m) deep Lefroy Shaft in 1883. In 1888 the Tasmanian Gold Mining & Quartz Crushing Company (TGM&QCCo) absorbed the other mines. In 1892 that company excavated a new shaft (the Main Shaft) to 720 feet (220 m) and fitted it with larger capacity pumps.

The Main Shaft was deepened to 920 ft (280 m) by 1898 and supplementary pumps were added. A New Main Shaft was also excavated to 1000 ft (305 m), and the Drainage Union Pump was installed in its lower reaches with a second pump above it.

In 1903 the Government Geologist recommended a further increase in pumping capacity to enable working below the 1000 foot (305 m) level. The directors ordered three huge steam pumping engines. By 1906 two were installed at a new shaft (the Grubb Shaft) and the third at the enlarged New Main Shaft (renamed Hart Shaft). These were the largest mine dewatering pumps in the world and they allowed mining down to 1500 ft (450 m). Unfortunately the mudstone in the Grubb Shaft moved and there was no room for a cage, so that a winder was not installed.

With costs rising and the ore grade decreasing, the last dividend was paid in 1908 and mining ceased in 1914. The kilometres of shafts, tunnels and winzes slowly filled with water. In its 37 years of operation, over one million tonnes of ore were mined and 840,000 ounces (26 tonnes) of gold were recovered.

Interest in the mine reawakened in 1979 and, after several false starts, Beaconsfield Gold Joint Venture redeveloped the Hart Shaft, progressively dewatered the mine, installed massive electric pumps and restarted gold extraction. Mining is highly mechanised, with rubber-tyred trucks carrying the ore from the lower levels up to the base of the Hart Shaft running on a 1 in 8 decline. The gold recovery process using bacterial oxidation was perfected in Australia and exported to the world. The first ingot was poured in 1999 and the company began paying dividends in 2002.

Some of the original pumping equipment has been recovered and is on display at an excellent museum located in the original mine buildings. The museum includes a three-dimensional scale model of the extensive underground workings. Guided and self-guided tours around the Grubb Shaft ruins are available every day.

ARRANGEMENTS OF SHAFTS & PUMPS OVER TIME

These arrangements are described in the following pages.

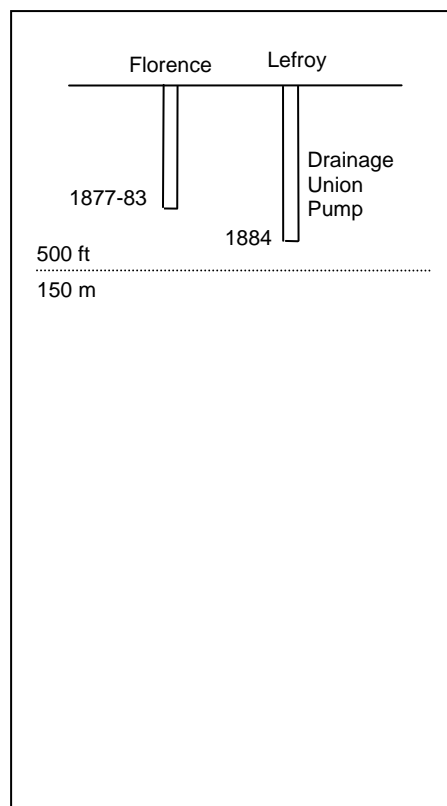


Figure 1

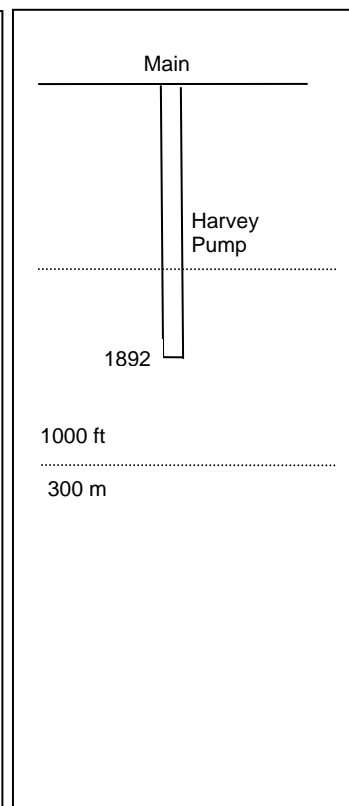


Figure 2

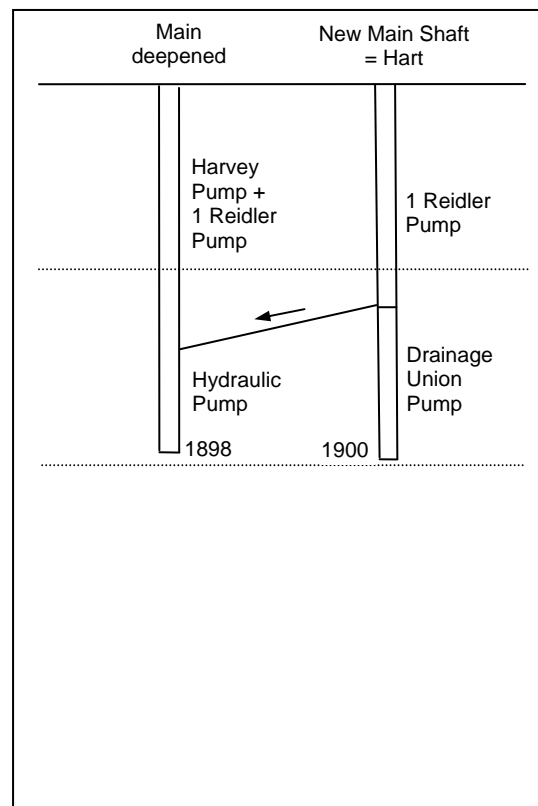


Figure 3

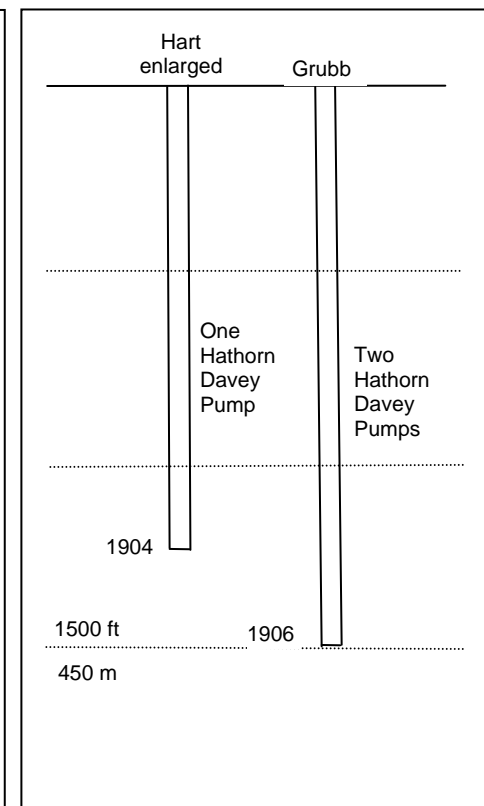


Figure 4

PUMPING EQUIPMENT

a) Early Plant 1878-92

In this period the steam pumping plant on site developed from very simple colonial equipment of limited capacity and sometimes questionable reliability, fired with timber from the surrounding bush, to some of the most sophisticated imported machinery from the world's leading pump makers. New South Wales coal fuelled the boilers.

By 1883 at least five pumping plants had been installed. The Florence Nightingale Mine was probably the first, followed by Dally's United, Golden Gate and the Tasmania Mine. The Florence Nightingale pump kept the Tasmania Mine dry and highly profitable for the first six years. These plants were superseded when the Drainage Union was formed. See Figure 1.

The Drainage Union pumping engine was commissioned at the Lefroy Shaft in 1883. Its single horizontal cylinder developed about 40 horse-power and drove Cornish pitwork (explained later). A counterweight balanced the weight of the 486 ft long pump rod down the shaft. Plunger pumps 20 inches (510 mm) in diameter (pumping on the down stroke) were at fixed locations, while lift pumps 14 inches (354 mm) in diameter (lifting on the up stroke) followed the shaft bottom down.

b) Cornish & Other Pumps 1892-1903

The TGM&QCCo ordered a new pumping engine from Harvey & Co Ltd, Hayle, Cornwall in 1890, and it was commissioned at the Main Shaft in 1892. See Figure 2. This engine was rated at 500 horse-power (375 kW) and the pump capacity was 3.28 million gallons per day (185 L/s). This two cylinder compound horizontal steam engine again operated Cornish pit work. The engine connecting rod drove two angle bobs on opposite sides of the shaft operating two sets of pump rods. The speed was 10 strokes per minute, each stroke being 10 feet (3 m).

When more capacity was required in the late 1890s, a new limitation emerged. The shafts then in existence had insufficient space to allow further pumping plant employing Cornish pit work to be installed. Other options were considered.

The Company first decided to employ the hydraulic pumping method in which high pressure water is piped down the shaft and used to drive a hydraulic pump within the mine. In 1898 the Company ordered a hydraulic pumping engine from Easton, Anderson & Goolden of Erith, Kent. This plant had a 750 horse-power (560 kW) vertical triple expansion engine taking steam at 175 psi from a bank of four boilers. The hydraulic ram motor was located at the 720 foot (219 m) level in the Main Shaft which was the bottom lift level of the Harvey pumps. See Figure 3. The ram motor operated conventional pumps some 200 feet (60 m) lower by a system of chains and poles. The pump was rated at 3 million gallons per day (156 L/s) at a head of 400 feet (120 m).

As a stop-gap measure the Company adopted another option, that of generating steam at the surface and piping it down the shaft to a steam pumping engine deep in the mine. For this purpose two Reidler engines were purchased. Details are scarce but it is understood that a conventional steam engine drove a differential type plunger pump with mechanically operated valves to permit higher operating speeds without water hammer.

One Reidler pumping engine was located at the 720 ft (219 m) level in the Main Shaft to assist the Harvey engine when required. See Figure 3. The other was installed in the Hart Shaft at the 600 ft level (180 m) to take water from the old Drainage Union Pump which had been relocated from the Lefroy Shaft. If sufficient capacity was available, water was let down

from the 600 ft level in the Hart Shaft to the 720 ft level in the Main Shaft because the Harvey Pump was much more efficient.

The capacity of each Reidler pump was probably about 700,000 gallons per day (36 L/s) for heads up to 770 feet (235 m).

As a result of these additions, the Tasmania Mine had not only a very large and complex pumping system in operation in two shafts but was using four different pumping technologies. Five pumping engines were installed in a complicated series/parallel arrangement with a total capacity of about 4.6 million gallons per day (240 L/s).

c) Hathorn Davey Giant Engines 1903-14.

In 1903 the Directors decided to place an order for three huge pumping engines from Hathorn Davey & Co of Leeds, Yorkshire, with a capacity of 6.5 million gallons per day (340 L/s) from a depth of 2000 feet (610 m). This installation was described as "the most extensive pumping machinery in the southern hemisphere".

Two pumping engines were placed in the new Grubb Shaft and one in the enlarged Hart Shaft. See Figure 4. A new Boiler house was built between the two shafts to supply steam at 150 psi to the pumping engines and the winders. The boiler house had a 180 foot high flue and was designed for up to 22 boilers but only 12 were installed.

The Hathorn Davey engines were two cylinder compound horizontal engines rated at 1350 horse-power (1,000 kW) each. The connecting rods drove direct to the angle bobs on either side of the shaft operating two sets of Cornish pit work with a 10 foot (3 m) stroke. The engines were fitted with the Davey Differential system of control which was capable of bringing the engine to a standstill very quickly in the event of pump rod breakage or loss of suction, a safeguard against catastrophic damage. The balance bobs were located in a chamber at the 400 ft (120 m) level. The balance boxes were water-filled and contained up to 11 tonnes each.

Installation of the 3 engines took place in 1905-06 and was referred to as "the largest and most extensive pumping plant in the world". As the engines were progressively commissioned, the older pumping equipment was retired. The new engines were able to handle the water until 1913 when more capacity was needed due to working at progressively greater depths. The Directors then made the decision to cease further shaft sinking.

d) Boiler Plant

Three new brick buildings were constructed to house the new machinery. Separate engine houses were built for the Hart and Grubb Shafts with a large Boiler House between them. Over a million bricks were used.

The directors ordered six Babcock and Wilcox wrought iron front water tube boilers to drive the 3 engines. The steam pressure was 150 psi. An economiser was fitted in the brick flue to the 180 foot high steel stack. The Boiler House also contained at least six cylindrical (Cornish) boilers operating at 80 psi supplying steam to the Fraser & Chalmers Corliss winding engine on the Hart Shaft, the Bellis electrical generating set, two Reidler pumps and other small steam engines.

e) **Cornish Pitwork** See Figure 6

The pit work involved with the Hathorn Davey pumping engines was impressive.

In the Grubb Shaft where there were two engines, four pump rods were installed. As the pumps were installed in 500 foot (150 m) lifts, there were three sets of pumps lifting from the 1500 foot (450 m), 1000 foot (300 m) and 500 foot (150 m) levels. At each level there were two pumps per engine for a total of 12 pumps. In the Hart Shaft with its single engine there were another 6 pumps.

The pump rods in the upper 500 feet (150 m) were made of 4 square baulks of pitch pine (*Pinus Palustris*) each supplied in 37 foot (11 m) lengths. Together the baulks made the rods 22 inches (560 mm) square. Longitudinal joints were made with one inch (25 mm) thick steel plates bolted with two staggered rows of steel bolts on each pair of faces.

From 500 feet to 1000 feet the rods were 18 inches (450 mm) square, and from 1000 feet to the bottom they were 16 inches (400 mm) square. Each pump rod weighed 170 tonnes.

The pumps were of the ram (plunger) type with a 20 inch bore (510 mm) and 10 feet (3 m) stroke, the same as the engines. The pumps delivered on the down stroke using the weight of the rod less the loading in the balance boxes to pump the 3 lifts simultaneously via 16 inch (400 mm) diameter rising mains of thin walled steel. The load of water in the balance boxes could be adjusted to obtain the correct balance between the pump load and rod weight.

At each level the pumps cylinders were offset so that the pump rods could pass between them. The top of each ram was attached to its pump rod by a spacer and four large U-bolts. Each pump cylinder rested on horizontal wooden beams to support the weight and downward thrust of the ram. The inlet and outlet valves were simple hinged flap valves with rubber-impregnated canvas seats. Water was drawn into the cylinder from a wood-lined cistern under the pump foundation via a coarse screen, S-bend and inlet valve. On the downstroke, the inlet valve closed. The water was forced out through the outlet valve into the rising main and eventually up 500 feet (150 m) to the next pump cistern. On the upstroke, the outlet valve closed to prevent any return flow from the rising main.

f) Tabulation of technical data

DATE	SHAFT DEPTH	PUMPING EQUIPMENT	CAPACITY
1877-83	330 ft (100 m)	At least five pumping plants in several mines. Rotative engines, wood-fired boilers.	
1884	420 ft (130 m) Lefroy Shaft	Drainage Union, single cylinder rotative engine, Cornish pit work, 300 hp (220 kW)	Total 3 mg/d 160 L/s
1892	720 ft (219 m) Main Shaft	Harvey, two cylinder tandem compound non-rotative engine 500hp (375 kW). Steam at 70 psi. Cylinders 45 and 72 inch (1.1 & 1.8 m) diameter. Stroke 10 feet (3 m).	3.5 mg/d 185 L/s
1898	920 ft (280m) Main Shaft	Harvey engine and one Reidler pump	4.6 mg/d 240 L/s
		EA&G, triple expansion steam engine 750 hp (560 kW), steam at 175 psi, driving an hydraulic pump which delivered water at 2100 psi to ram motor in the mine, driving Cornish pumps 200 ft (60 m) lower.	
	1000 ft (305 m) Hart Shaft (originally New Main Shaft)	One Reidler pump. Some water transferred to Main Shaft. Drainage Union engine moved from Lefroy shaft.	
1905-14	1230 ft (375 m) Hart Shaft	1 Hathorn Davey non-rotative engine, high & low pressure cylinders. HP cylinder 50" (1270 mm) dia. LP cylinder 108" (2740mm) dia. Stroke 10 ft (3 m). Coal-fired boilers, steam at 150 psi. 1000 kW	6.5 mg/d 340 L/s
	1500 ft (457 m) Grubb Shaft	2 Hathorn Davey engines as above.	

DECISION TO CLOSE THE MINE

In 1913 it was calculated that the next step in the development would cost £90,000. The directors were reluctant to proceed for several reasons: the company had not made a profit since 1908, the unions wanted higher wages and recovery grades were decreasing with depth. Closure began in March 1914 but stopped after public outcry and intervention of the Tasmanian Government. Mining was continued by a group of tributers but was still uneconomic. The final blow came when the low pressure cylinder of the eastern Grubb Shaft engine failed and the water started to rise.

It seems likely that strenuous efforts were made to dispose of the mine assets. Equipment not sold would have been scrapped as part of the war effort when scrap metal was scarce.

WHAT REMAINS?

During the 1920s the timbering in the Grubb shaft failed resulting in the collapse of the shaft collar and the rear part of the engine house. The whole of the pit work is still in place with the tops of the four pump rods protruding from a pool of water at the top of what is left of the collar.

As the Beaconsfield Mine Joint Venture re-established the Hart Shaft, the pump rods were removed. The stage pumps at the 500 feet (150 m) and 1000 feet (300 m) levels were missing. The two pumps found at the bottom of the shaft were big, each 40 feet long and weighing 15.5 tonnes. The pump rods and some of the pumping hardware are on display at the Museum.

GRUBB SHAFT MUSEUM

When the Beaconsfield Mine Joint Venture established its operations at the Hart Shaft in 1981, it became possible to allocate the Grubb Shaft Engine House and the Boiler House to the West Tamar Council for a museum. The rear part of the Engine House has collapsed along with the foundations of the pumping engines and the shaft collar. This has been stabilised, and the building and foundation debris made into a feature of the museum.

The museum opened in 1984 and now displays a unique combination of historical artefacts from the region, remnants of equipment from the original Tasmania Gold Mine, and a glimpse into the headframe yard of the new mining operations. The museum attracts 20,000 visitors each year.

CURRENT MINING OPERATION

Allstate Explorations NL took out an exploration licence over the Beaconsfield area in 1969. By 1980 a firm plan to reopen the Hart Shaft commenced, with Allstate and AMAX involved. The objective was to evaluate the potential of the reef in the light of modern technology both for mining and processing. A diamond drilling program identified over a million ounces of gold (over 30 tonnes) within an 1150 feet (350 m) deep zone immediately below the flooded workings.

The Engine House of the Hart Shaft had suffered structural damage due to failure in the nearby shaft. The company has assisted with heritage conservation by spending \$400,000 on the restoration of the Engine House which now contains the electric winder for the new steel headframe.

An ownership restructure involving Allstate Explorations NL and Beaconsfield Gold NL enabled work to commence in 1994. Dewatering began using electric pumps with a capacity of 15.2 million gallons per day (800 L/s).

Mine workings currently (2004) extend down to 3300 feet (1000 m) by means of a decline from the bottom of the Hart Shaft. Ore is extracted from the stopes and carried up the decline in underground trucks. See Figure 5.

A modern gold processing plant has been built. It consists of a crushing and grinding plant with some of the gold being recovered by gravity. The remainder is a sulphide concentrate which is separated and treated by bacterial oxidation, followed by cyanidation and zinc precipitation. Cyanides are neutralised before tailings are sent to the tailings pond.

The company plans to produce 100,000 ounces of gold per annum for revenue, at current gold prices, of about \$A50 million.

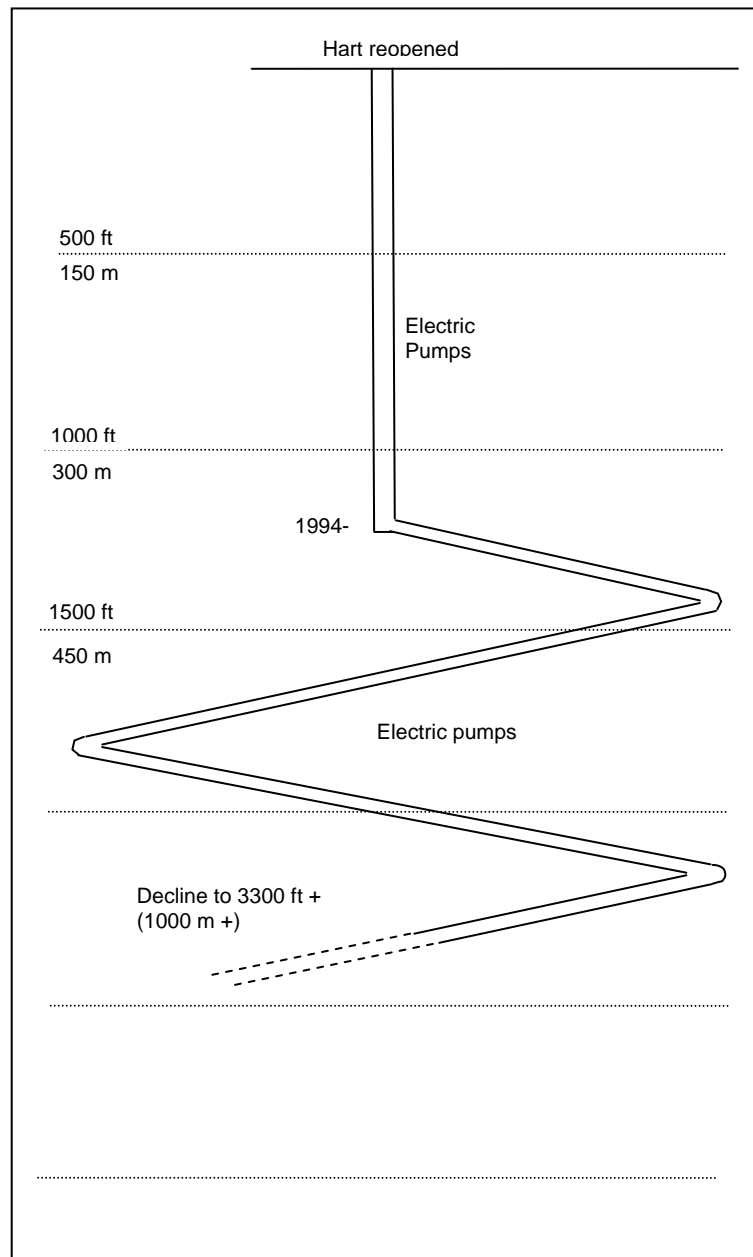


Figure 5

DATE	SHAFT DEPTH	PUMPING EQUIPMENT	CAPACITY
1999-	Decline to 3300 ft (1000 m)	Electric pumps at various levels	15 mg/d 800 L/s

ENGINEERING HERITAGE ASSESSMENT

a) Basic Data

Item Name:	Tasmania Gold Mine
Other/Former Names:	Lefroy
Location (grid reference if possible):	AMG Zone 55 4844E 54387N.
Address:	West Street
Suburb/Nearest Town:	Beaconsfield
State:	Tasmania
Local Govt. Area:	West Tamar
Mine owner:	Beaconsfield Gold Joint Venture
Museum owner:	West Tamar Council
Current Use:	Gold mining restarted 1999
Former Use (if any):	Gold mining 1877-1914
Designer:	NA
Maker/Builder:	NA
Year Started: 1877	Year Completed: Continuing
Physical Description:	An underground gold mine originally extending down to 450 metres below surface, serviced by four shafts and huge pumps to control the water level. An excellent mining museum and surface tour on site. Various relics from the original mine. A new mining operation in production.
Physical Condition:	The original shafts, stopes and winzes still exist underground. One shaft has collapsed. Some of the original pumps have been recovered; the remainder abandoned. One shaft has been refurbished and is in use, with new pumps.
Modifications and Dates:	The mine was developed progressively. Larger pumping equipment was installed to enable mining to continue to greater depths.
Historical Notes:	See History section on page 6.
Heritage Listings	Register of the National Estate ID 12517 (26/03/1985) Nominated for Tasmanian Heritage Register Ref C5195. Listed by National Trust (Tasmania).

b) Assessment of significance**Historic Phase**

Tasmania had its own mini gold rush in 1877 when William Dally discovered a reef of gold on the eastern slopes of Cabbage Tree Hill near the future town of Beaconsfield. Five companies established mines along the reef and all encountered severe water inflows which resulted in the mines amalgamating in 1888 to finance a major pumping plant.

The mine closed in 1914 after producing 26,580 kg of gold at a yield of 24.7 grams per tonne in 37 years.

The mine has recently been reopened and has become a productive and profitable venture using modern technology to overcome the water problem, extract the ore and recover the gold.

The Tasmania Gold Mine was therefore responsible for supporting a substantial community between 1877 and 1914, and is doing so again since 1999.

Historic Individuals or Association

The Hart Shaft was named for **William Hart**, a Launceston hardware merchant and importer. He was a founding director of the New Native Youth Gold Mine at Lefroy in 1869 and the Mt Bischoff Tin Mine in 1873. He was one of the purchasers of the Tasmania Gold Mine and, when it was formed into a company in 1877, he became a director and was chairman of directors thereafter. He was also a warden of the Launceston Marine Board, chairman of the Chamber of Commerce, alderman of the Launceston City Council and a long time member of the Tasmanian Parliament.

The Grubb Shaft was named for **Frederick Grubb**, a Launceston solicitor. He and Hart bought the Tasmania Reef claim at Beaconsfield and formed the Tasmanian Gold Mining and Quartz Crushing Company. He also became a member of the Tasmanian Parliament.

Joseph Davies was the manager of the Tasmania Gold Mine from 1877 to 1903.

William Wright was Engineer-in-Chief of the Tasmania Gold Mine from 1894 until 1906. Born in England he had had extensive experience in the UK and NSW. Among other works he supervised the installation of the Reidler pumping machinery down the mine, the first of its kind in Tasmania.

C F Heathcoate AMICE, the Western Silver Mine general manager at Zeehan, succeeded Joseph Davies as general mine manager at Beaconsfield in 1903.

Creative or Technical Achievement

As the mining operations penetrated deeper into the reef, the water inflows increased and progressively larger pumping machinery was required. Over the years the mine used several different types of pumping equipment, demonstrating the advances in pumping technology. The water problem eventually led to the installation of the largest pumping engines of any mine in the world.

A century later another generation of gold miners has beaten the water problem with megawatts of electric pumping power and are using a gold recovery technology perfected in Australia and exported to the world.

Research Potential

There are some unanswered questions about the pumping equipment.

Social

During the most active mining years the town grew to a population of 5,000 with seven hotels, eight boarding house, five schools, four football teams and twenty six stores. Transport between Launceston and Beaconsfield was by steamer on the Tamar River or stage coach. From 1881 there was a horse-drawn tram running 6 km from the jetty at Beauty Point to the town.

The closure of the mine was a great loss to the town whose tribute miners tried hard to keep it going when mining had become uneconomic for the company.

Rarity

The fact that large pumping plants were available suggests that other mines had large water inflows, but the installation of three of the largest pumps in the world probably indicates that at Beaconsfield the problem was the most severe.

Representativeness

The use of shafts and winders, the mining, transport and crushing of the ore and the extraction of the gold are all representative of underground gold mines in the period. Only the severe water problem is different.

Integrity/Intactness

Much of the original mining and pumping equipment has been lost, either trapped in the collapsed Grubb Shaft or removed and sold off when the mine closed. However enough has been salvaged from the Hart Shaft when it was re-opened and put on display in the museum in the Grubb Shaft buildings for visitors to appreciate the original arrangement. The Hart Shaft engine house has been restored.

c) Statement of Significance

The Tasmania Gold Mine is significant for

- the constant battle to continue mining at greater depths in the face of increasing water inflows and periodic flooding;
- the succession of pumping systems of differing types and ever increasing capacity;
- the installation of the largest and most extensive mine pumping system in the world at the time;
- its importance to the community of Beaconsfield which grew to a population of 5000 with seven hotels, eight boarding houses, five schools, four football teams and 26 stores;
- its on-site museum located in the remains of the Grubb Shaft Engine House and the Boiler House which attracts 20,000 visitors per year;
- the fact that modern technology and a changed economic situation have enabled the mine to be reopened and operated in a profitable manner.

Assessed Significance

National

State

Local

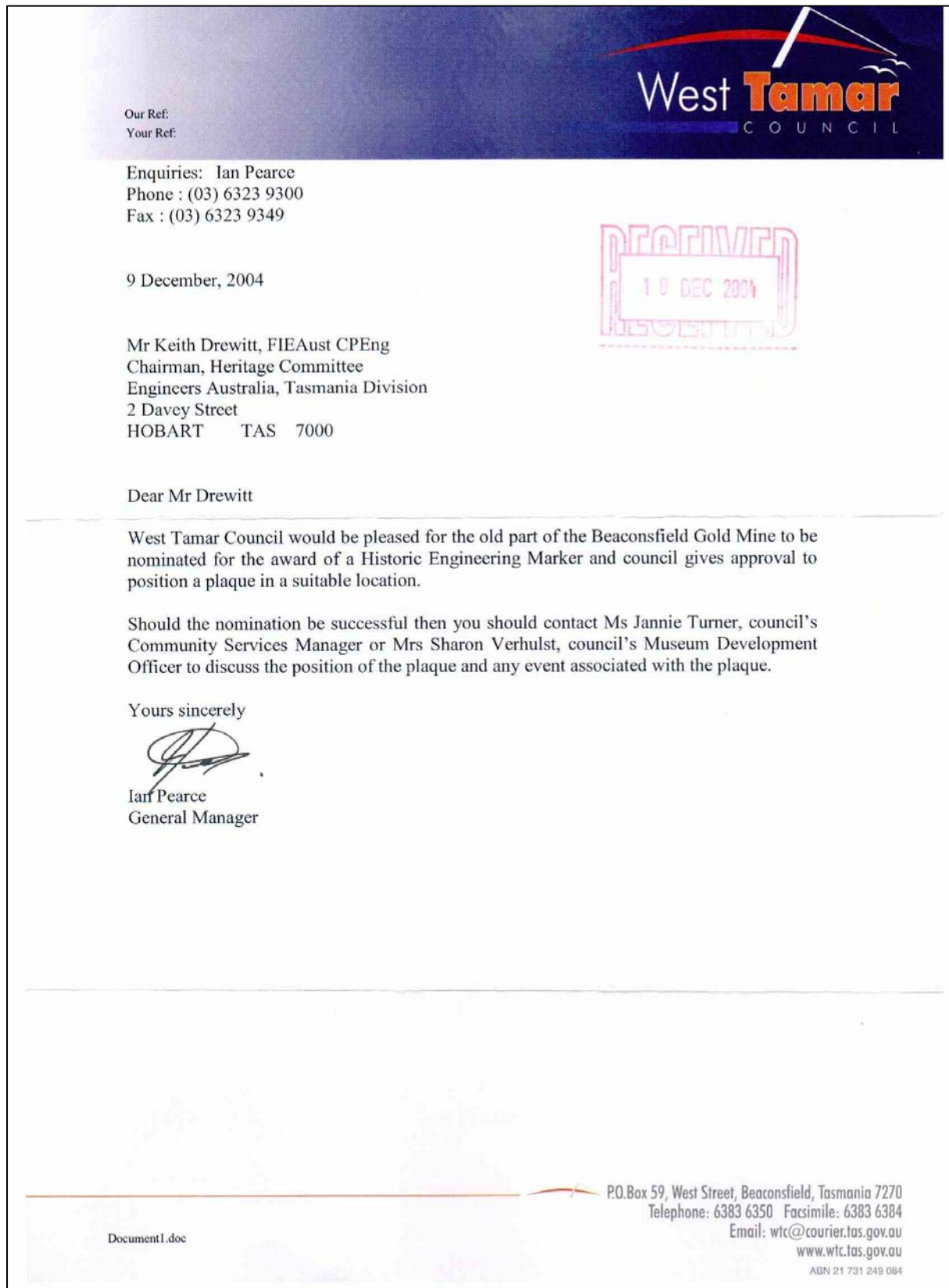
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DRAFT CITATION**TASMANIA GOLD MINE, BEACONSFIELD**

Underground mining began in 1878. With the reef located in an underground aquifer, mining required ever-increasing pumping capacity as the workings followed the reef down. Eventually three Hathorn Davey steam pumping engines and Cornish pit work were installed in two shafts 450 metres deep, the largest and most extensive pumping plant in the world. The mine supported a thriving town until the mine became uneconomic and closed in 1914. Good times returned in 1999 when the mine re-opened and production resumed, using electric pumps. (85 words)

The Institution of Engineers Australia
Beaconsfield Mine Joint Venture and West Tamar Council 2005

APPENDIX A



APPENDIX B

BEACONSFIELD MINE JOINT VENTURE

ALLSTATE EXPLORATIONS NL
(Subject to Deed of Company Arrangement)
ABN 27 000 679 023 002
(Manager of the Beaconsfield Mine Joint Venture)



5 West Street
Beaconsfield Tas 7270
Phone: (03) 6383 6500
Facsimile: (03) 6383 6590

2 February 2005

Mr. B Cole
Engineering Heritage Committee
Engineers Aust. Tasmania Division
2 Davey St, HOBART, TAS 7000

Dear Bruce,

Re: BEACONSFIELD GOLD MINE NOMINATION

I refer to your letter dated 21 January 2005.

We fully support the recognising of the magnificent pumping infrastructure used at the mine during the late 1800s through to 1914, and would welcome the opportunity to be a part of this ceremony.

Regards,

Matthew Gill
Resident Manager – Beaconsfield Gold Mine

APPENDIX C**References**

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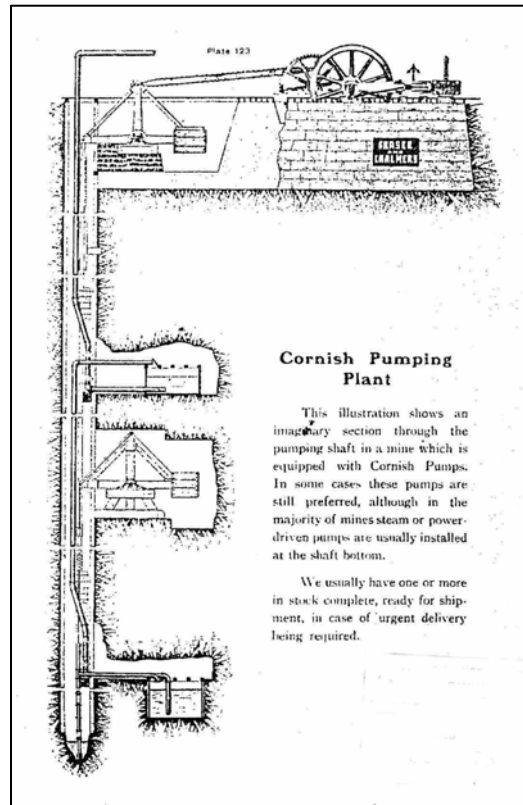
APPENDIX D
Photographs

Figure 6: Example of Cornish pitwork (not Beaconsfield) showing pump rods, balance weights and cisterns

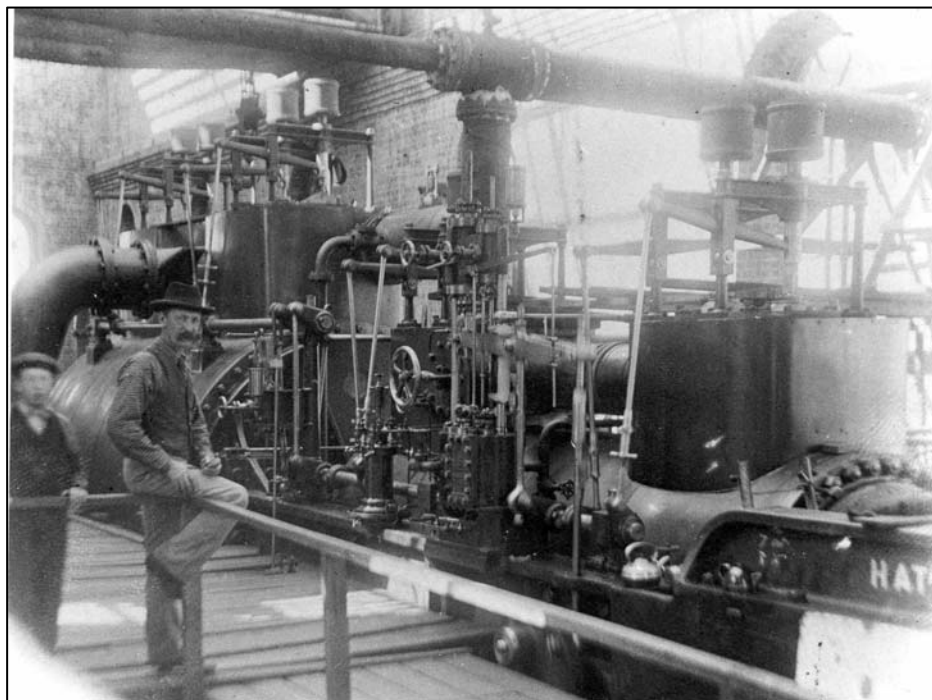


Figure 7: Hathorn Davey Steam Pumping Engine

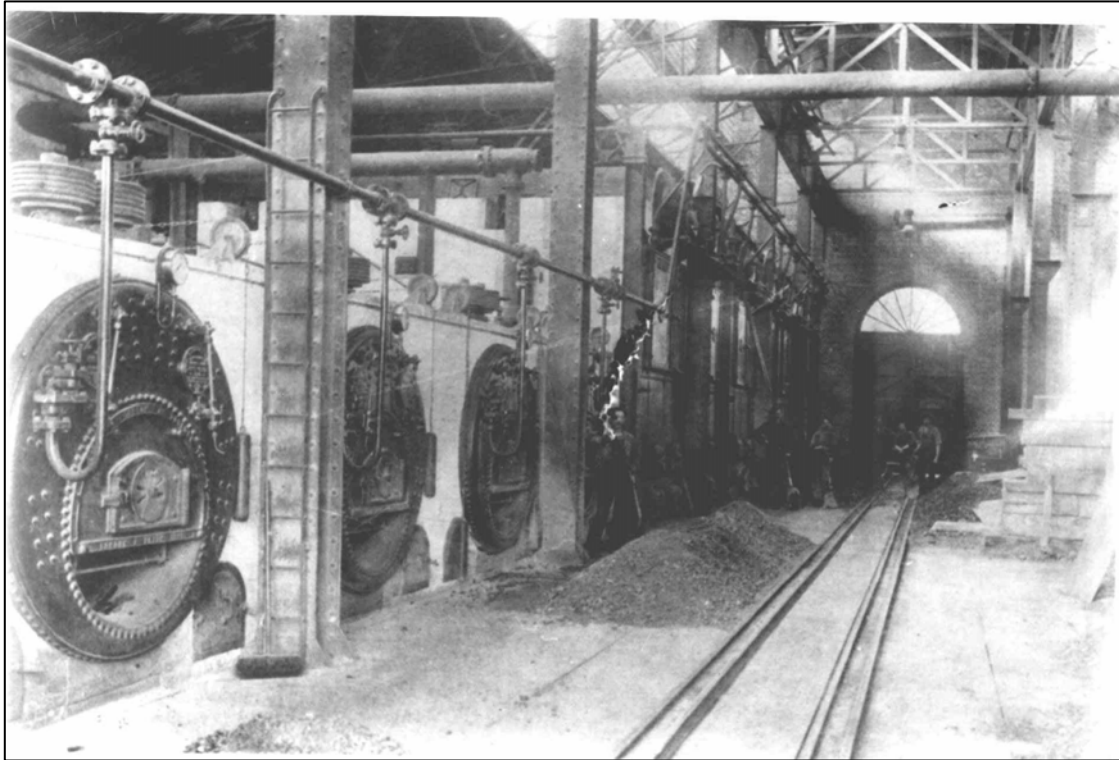


Figure 9: 1905 Boiler House for Hathorn Davey engines and other engines.



Figure 10: Grubb Shaft Museum and Boiler House shell in background.
Underground loader and traction engine in foreground.



Figure 11: Pump rod splice plates ex Hart Shaft



Figure 12: Inlet/outlet valve chest from Hart Shaft



Figure 13: New Hart Shaft headframe behind old Hart Shaft engine house